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## Symbols Explained

**WARNING:** Risk of serious injury or death**NOTE:** Additional information

Action step



Positive result

CCB

Channel Control Button

### Read this first!

### English

Before operating this device, please read this manual thoroughly and retain this manual for future reference. This device may only be installed and put into operation by qualified personnel. If damage or malfunction should occur during operation, immediately turn power off and send device to the factory for inspection. The device does not contain serviceable parts. The information presented in this document is believed to be accurate and reliable and may change without notice. For any clarifications the English translation will be used.

**WARNING:** Risk of electrical shock, fire, personal injury, or death.

- Turn power off before working on the device. Protect against inadvertent re-powering.
- Do not open, modify or repair the device.
- Use caution to prevent any foreign objects from entering the housing.
- Do not use in wet locations or in areas where moisture or condensation can be expected.
- Do not touch during power-on and immediately after power-off. Hot surfaces may cause burns.

**NOTE:** Tips for optimal use

- Consult the information in the technical data table.
- For further information and configuration please refer to the datasheet.

## Product Description

The PISA-M devices are miniature four-channel protection modules for 24 V and 12 V systems.

## Intended Use

This device is designed for installation in an enclosure and is intended for commercial use, such as in industrial control, process control, monitoring and measurement equipment or the like. Do not use this device in equipment, where malfunctioning may cause severe personal injury or threaten human life without additional appropriate safety devices, that are suited for the end-application. If this device is used in a manner outside of its specification, the protection provided by the device may be impaired.

## Installation Instruction

Install the device in an enclosure providing protection against electrical, mechanical and fire hazards. Install the device onto a DIN rail according to EN 60715 with the input terminals on top of the unit.

Use an appropriately sized 24 V or 12 V power supply, which can deliver the peak current required to trip the load channels. If peak currents are too low, the PISA-M will trip channels in case of voltage drops to protect the power supply from overload.

Make sure that the wiring is correct by following all local and national codes. Use appropriate copper cables that are designed for a minimum operating temperature of +60 °C for ambient temperatures up to +45 °C, +75 °C for ambient temperatures up to +60 °C and +90 °C for ambient temperatures up to +70 °C. Ensure that all strands of a stranded wire enter the terminal connection.

The device is designed for pollution degree 2 areas in controlled environments. No condensation or frost is allowed. The enclosure of the device provides a degree of ingress protection of IP20. The housing does not provide protection against spilled liquids.

The isolation of the devices is designed to withstand impulse voltages up to 1.5 kV according to IEC 60664-1. The input can be powered from a regulated power supply or a similar DC source.

The input must be powered from a PELV or SELV source in order to maintain a SELV or PELV output. Check for correct input polarity. The device will not operate when the voltage is reversed.

A disconnecting means shall be provided for the input of the device.

The device is designed as "Class of Protection III" equipment according to IEC 61140.

The device is designed for convection cooling and does not require an external fan. Do not obstruct airflow and do not cover ventilation grid!

Keep the following minimum installation clearances: 40 mm on top, 30 mm on the bottom, 0 mm left and right side. Increase the 0 mm to 15 mm in case the adjacent device is a heat source. Between multiple PISA-M modules no clearance is needed. The device is designed for altitudes up to 5000 m.

The maximum surrounding air temperature is +70 °C. The operational temperature is the same as the ambient or surrounding air temperature and is defined 3 cm below the device. The device is designed to operate in areas between 5 % and 95 % relative humidity.

## Functional Description

The output can supply any kind of loads, including inductive and capacitive loads. The maximum size of capacitive loads is specified in the "Technical Data" table. Larger load capacitors might result in an unintended turn-off of the channel.

Do not apply return voltages from the load to the output terminals higher than 30 V.

Do not parallel outputs for higher output currents.

Do not connect outputs in a series connection for higher output voltages.

Do not connect batteries for charging purposes to the output of the device.

Output channels can be switched on and off separately by pushing the corresponding control button for 50 ms or 1 s, depending on selected button reaction style. A channel that is switched off is indicated by the red LED.

If the total current is larger than 20 A for 2 s or more, the device turns off the output channels, starting with overloaded channels, then continuing with CH4 to CH1 until the total output current is 20 A or less. The tripping current can be set individually for all channels. The tripping characteristic can be set as a common parameter for all channels.

**Vor Inbetriebnahme lesen!****Deutsch**

Bitte lesen Sie diese Warnungen und Hinweise sorgfältig durch, bevor Sie das Gerät in Betrieb nehmen. Bewahren Sie die Anleitung zum Nachlesen auf. Das Gerät darf nur durch fachkundiges und qualifiziertes Personal installiert werden. Bei Funktionsstörungen oder Beschädigungen schalten Sie sofort die Versorgungsspannung ab und senden das Gerät zur Überprüfung ins Werk. Das Gerät beinhaltet keine Servicebauteile. Die angegebenen Daten dienen allein der Produktbeschreibung und sind nicht als zugesicherte Eigenschaften im Rechtssinne aufzufassen. Im Zweifelsfall gilt der englische Text.



**WARNUNG:** Missachtung nachfolgender Punkte kann einen elektrischen Schlag, Brände, schwere Unfälle oder Tod zur Folge haben.

- Schalten Sie die Eingangsspannung vor Installations-, Wartungs- oder Änderungsarbeiten ab und sichern Sie diese gegen unbeabsichtigtes Wiedereinschalten.
- Führen Sie keine Änderungen oder Reparaturversuche am Gerät durch. Gerät nicht öffnen.
- Verhindern Sie das Eindringen von Fremdkörpern, wie z.B. Büroklammern und Metallteilen.
- Betreiben Sie das Gerät nicht in feuchter Umgebung oder in einer Umgebung, bei der mit Betauung oder Kondensation zu rechnen ist.
- Gehäuse nicht während des Betriebes oder kurz nach dem Abschalten berühren. Heiße Oberflächen können Verletzungen verursachen.

**A lire avant mise sous tension!****Francais**

Veillez lire ces instructions de montage et d'entretien avant de mettre l'alimentation sous tension. Conservez ce manuel qui vous sera toujours utile. Cette alimentation ne doit être installée que par du personnel qualifié et compétent. En cas de dommage ou dysfonctionnement, coupez immédiatement la tension d'alimentation et retournez l'appareil à l'usine pour vérification. ! L'alimentation ne contient pas de pièces échangeables Les données indiquées dans ce document servent uniquement à donner une description du produit et n'ont aucune valeur juridique. En cas de divergences, le texte anglais fait foi.



**AVERTISSEMENT:** Risque de blessure grave ou de mort par choc électrique

- Mettre l'alimentation hors tension avant toute intervention sur celle-ci et s'assurer qu'il n'y a pas risque de redémarrage.
- Ne pas ouvrir, modifier ou réparer l'alimentation.
- Veiller à ce qu'aucun objet ne rentre en contact avec l'intérieur de l'alimentation (trombones, pièces métalliques).
- Ne pas faire fonctionner l'appareil dans un environnement humide ou dans un environnement où il peut y avoir de la condensation.
- Ne pas toucher le carter pendant le fonctionnement ou directement après la mise hors tension. Surface chaude risquant d'entraîner des blessures.

**Lea primero!****Espanol**

Conservar este manual como referencia para futuras consultas. La fuente de alimentación solo puede ser instalada y puesta en funcionamiento por personal cualificado. Por favor lea detenidamente este manual antes de conectar la fuente de alimentación. Si se produce un fallo o mal funcionamiento durante la operación, desconecte inmediatamente la tensión de alimentación. En ambos casos, el equipo debe ser inspeccionado en fábrica. La información presentada en este documento es exacta y fiable en cuanto a la descripción del producto y puede cambiar sin aviso. En casa de duda, prevalece el texto inglés.



**ADVERTENCIA:** Riesgo de descarga eléctrica, incendio, accidente grave o muerte.

- Desconectar la tensión de red antes de trabajar en la fuente de alimentación. Evite una posible reconexión involuntaria.
- No realizar ninguna modificación o reparación de la unidad. No abrir la unidad.
- Evitar la introducción en la carcasa de objetos extraños.
- No usar el equipo en ambientes húmedos. No operar el equipo en ambientes donde se espere la formación de rocío o condensación.
- No tocar durante el funcionamiento ni inmediatamente después del apagado. El calor de la superficie puede causar quemaduras graves.

**Leia primeiro!****Português**

Recomendamos a leitura cuidadosa das seguintes advertências e observações, antes de colocar em funcionamento a fonte de alimentação. Guarde as Instruções para futura consulta, em casos de dúvida. A fonte de alimentação deverá ser instalada apenas por profissionais da área, tecnicamente qualificados. Se por acaso, durante a utilização ocorrer algum defeito de funcionamento ou dano, desligue imediatamente a tensão de alimentação. Em ambos os casos, será necessária uma verificação na Fábrica! Os dados mencionados têm como finalidade somente a descrição do produto, e não devem ser interpretados como propriedades garantidas no sentido jurídico. Em caso de dúvidas aplica-se o texto em inglês.



**AVISO:** A não observância ou o incumprimento dos pontos a seguir mencionados, poderá causar uma descarga elétrica, incêndios, acidentes graves ou morte.

- Antes de trabalhos de instalação, manutenção ou modificação, desligue a tensão de alimentação, protegendo-a contra uma nova ligação involuntária.
- Não efectue nenhuma modificação ou tentativa de reparação no aparelho. Quando necessário contacte o seu distribuidor. Não abra o aparelho.
- Proteger a fonte de alimentação contra a introdução inadvertida de corpos metálicos, como por ex., cliques ou outras peças de metal.
- Não usar o aparelho em ambientes húmidos. Não usar o aparelho em ambientes propensos a condensações.
- Não tocar enquanto estiver em funcionamento, nem após a desligar. A superfície poderá estar quente e provocar lesões.

**Leggere prima questa parte!****Italiano**

Prima di collegare il sistema di alimentazione elettrica si prega di leggere attentamente le seguenti avvertenze. Conservare le istruzioni per la consultazione futura. Il sistema di alimentazione elettrica deve essere installato solo da personale competente e qualificato. Se durante il funzionamento si verificano anomalie o guasti, scollegare immediatamente la tensione di alimentazione. In entrambi i casi è necessario far controllare l'apparecchio dal produttore! I dati sono indicati solo a scopo descrittivo del prodotto e non vanno considerati come caratteristiche garantite dell'apparecchio. In caso di differenze o problemi è valido il testo inglese.

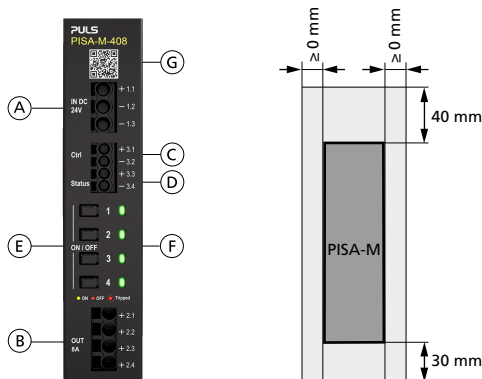


**AVVERTENZA:** Il mancato rispetto delle seguenti norme può provocare folgorazione elettrica, incendi, gravi incidenti e perfino la morte.

- Prima di eseguire interventi di installazione, di manutenzione o di modifica scollegare la tensione di rete ed adottare tutti i provvedimenti necessari per impedirne il ricollegamento non intenzionale.
- Non tentare di aprire, di modificare o di riparare da soli l'apparecchio.
- Impedire la penetrazione di corpi estranei nell'apparecchio, ad esempio fermagli o altri oggetti metallici.
- Non far funzionare l'apparecchio in un ambiente umido. Non far funzionare l'apparecchio in un ambiente soggetto alla formazione di condensa o di rugiada.
- Non toccare quando acceso e subito dopo lo spegnimento. La superficie calda può causare scottature.

## EN Installation Manual for Electricians

## Front Side and User Elements

**A Input Terminals**

Identical poles are internally connected.

- 1.1 (+) Positive input pole
- 1.2 (-) Negative input (return) pole
- 1.3 (-) Negative input (return) pole

**B Output Terminals**

- 2.1 (+) Channel 1 positive output pole
- 2.2 (+) Channel 2 positive output pole
- 2.3 (+) Channel 3 positive output pole
- 2.4 (+) Channel 4 positive output pole

**C Control Signal Input**

- 3.1 (+) Signal input positive pole
- 3.2 (-) Signal input negative (return) pole

Signal input can be used to send reset signal (1 s active) or for data communication using Digital Coded Interface.

**D Status Signal Output**

- 3.3 (+) Signal output positive pole
- 3.4 (-) Signal output negative (return) pole

Signal output can be set to several operation modes.

**E Channel Control Buttons (CCB)**

Press of button combinations to enter configuration modes.

**F Channel Status LEDs**

Show status of each output channel.

**G QR Code for direct access to documentation**

## Terminals and Wiring

|               |                   | Solid Wire<br>mm <sup>2</sup> | Stranded Wire<br>mm <sup>2</sup> | AWG | Max. Ø<br>mm | Wire Strip.<br>Length<br>mm |
|---------------|-------------------|-------------------------------|----------------------------------|-----|--------------|-----------------------------|
| <b>Input</b>  | Push-in terminals | ≤ 2.5                         | ≤ 2.5                            | 12  | 2.5          | 10                          |
| <b>Output</b> | Push-in terminals | ≤ 2.5                         | ≤ 2.5                            | 12  | 2.5          | 10                          |
| <b>Signal</b> | Push-in terminals | ≤ 1.5                         | ≤ 1.5                            | 16  | 0.75         | 10                          |

## Channel Status LEDs

|                       |                                                                                                                                       |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------|
| Green                 | Channel ON                                                                                                                            |
| Yellow                | Overload of channel detected – prewarning before channel is triggered                                                                 |
| Red                   | Channel turned OFF (manually or remotely)                                                                                             |
| Red (flashing)        | Channel tripped due to overload of this channel                                                                                       |
| Red (double-flashing) | Channel tripped due to device overload protection - total output current > 20 A for > 2 s - or power supply protection mode activated |
| LED OFF               | Device not powered                                                                                                                    |

For other blinking codes, see user manual.

## Mounting Instructions

- i** Pay attention to ambient conditions and installation clearances.
- ⇒ Install the device onto a DIN rail according to EN 60715, see Fig. 1-1.
- ⚠** Turn off power source before installation.
- ⇒ Connect the cables to output terminal B.
- ⇒ Connect the cables to input terminal A.
- ⇒ Connect the cables to signal terminals C and D.

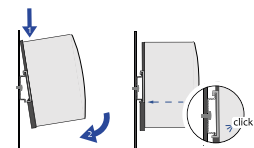


Fig. 1-1: Mounting

## Demounting Instructions

- ⚠ Warning:** Turn off power source before demounting.
- ⇒ Remove the cables at input terminal A.
- ⇒ Remove the cables at output terminal B.
- ⇒ Remove the cables at signal terminals C and D.
- ⇒ Insert a screwdriver into the lower tab and press the tab down to unlock, see Fig. 1-2.



Fig. 1-2: Demounting

User Configurable Settings

**i** For detailed configuration hints, see PISA-M user manual.

Turn channels ON or OFF

Factory setting: All outputs ON

- ⇒ Press of single CCB to switch selected channel ON/OFF .  
Required duration of button press can be configured.

Reset tripped channel

- ⇒ Press of single CCB > 1 s to reset a tripped channel manually.

Select Tripping Characteristic

Factory setting: Fast tripping characteristic

- ⇒ Press CCB1 and CCB3 simultaneously for 50 ms.
- ✓ LEDs 1 to 4 indicate present setting with a running light:
- Fast running light: Fast tripping characteristic
  - Slow running light: Slow tripping characteristic
- ⇒ Press CCB1 and CCB3 simultaneously for 50 ms within 4 s to toggle tripping characteristic.
- ✓ LEDs 1 to 4 indicate the updated setting with the running light.
- ⇒ Press any button (except CCB1 and CCB3 simultaneously) to exit setting mode.

**i** Device will exit setting mode automatically after 4 s inactivity.

Communication Modes

- |                     |                                             |
|---------------------|---------------------------------------------|
| • Tripping Alarm    | Alarm if channel(s) tripped                 |
| • Channel Off Alarm | Alarm if channel(s) switched off or tripped |
| • OK Signal         | OK signal if all channels on                |
| • DCI               | Digital Coded Interface                     |

Technical Data

|                          |                                                      |                                                                  |
|--------------------------|------------------------------------------------------|------------------------------------------------------------------|
| Input voltage            | DC 24 V<br>DC 12 V                                   | - 20 % / + 25 %<br>- 20 % / + 25 %                               |
| Input current            | 20 A                                                 | max.                                                             |
| Internal consumption     | 30 mA at 24 V<br>20 mA at 12 V                       |                                                                  |
| Nominal output current   | 8 A                                                  | per channel                                                      |
| Sum current all channels | 20 A                                                 | max.                                                             |
| Tripping characteristics | slow or fast                                         | selectable                                                       |
| Tripping delay           | < 2 ms<br>0.22 s                                     | at short circuit<br>for fast tripping at 1.5 x tripping setpoint |
|                          | < 10 ms<br>1.1 s                                     | at short circuit<br>for slow tripping at 1.5 x tripping setpoint |
| Capacitance load         | 40 mF, at 8 A, 24 V<br>resistive load, slow tripping | max., per channel                                                |
| Efficiency               | 99 % at 24 V<br>98 % at 12 V                         |                                                                  |
| Power losses             | 3.5 W at 24 V<br>3.0 W at 12 V                       | all channels with 5 A load                                       |
| Standby losses           | 0.7 W at 24 V<br>0.25 W at 12 V                      |                                                                  |
| Temperature Range        | -25 °C to + 70 °C                                    |                                                                  |
| Size (W x H x D)         | 22.5 x 104 x 98 mm                                   |                                                                  |
| Weight                   | 100 g                                                |                                                                  |

## Instructions for Use in Hazardous Location Areas



The device is suitable for use in Class I Division 2 Groups A, B, C, D locations and for use in Group II Category 3 (Zone 2) environments.

Classification: ATEX: EPS 26 ATEX 1 077 X, II 3G Ex ec IIC T4 Gc  
IECEX: IECEX EPS 26.0035X

### **WARNING EXPLOSION HAZARDS!**

Use the device only in standard vertical mounting orientation with the output terminals at the bottom of the unit.

The input must be powered from a PELV or SELV source.

Substitution of components may impair suitability for this environment.

Do not connect or disconnect the device or operate the push buttons unless power has been switched off or the environment is known to be non-hazardous.

The device must be installed in a tool-secured enclosure that provides a degree of protection not less than IP54, as defined in IEC 60079-0.

The device must be used in an area with a pollution degree of no more than 2, as defined in IEC 60664-1.

The maximum permissible ambient temperature of the device (70°C) must not be exceeded by any external heat sources. Therefore, sufficient clearance must be maintained between the device and any other heat sources.